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ABSTRACT

Once a year, all children in grades two through four in the schools of a suburb of Copenhagen, Denmark, are administered silent reading tests. The test scores become the basis for an hour-long dialogue between the respective classroom teacher and a reading specialist. The focus of the dialogue is the improvement of instruction for each child, and therefore an attempt is made to alert the teacher to the interaction between reading development and instruction with the hope that future instruction will be arranged with a clearer view of individual needs. Results from the project show that the general reading progression within the school system has changed and that the number of children with reading problems has been reduced. (Author/FL)

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Interaction between Reading Test Results and Elementary Reading Programs

Presented at International Reading Association, Seventh World Congress on Reading, Hamburg - August 1-3, 1978; Wednesday, August 2, 11.00 - 12.15 hours, Room 7, Congress Centrum.

Abstract

All children from grades 2 - 4 in suburban Lyngby-Taarbæk north of Copenhagen are tested once a year with silent reading tests. The results are analyzed with the respective mother-tongue teacher in a one-hour systematic dialogue with a reading specialist. The school-psychological office is in charge of arrangements and supervision. Results are used exclusively for internal evaluation. Being the educational unit with common developmental conditions, the class is given the highest weight in the analysis. The use of the reading test results in this strategy is not general monitoring but will show any specific interaction between test results and instruction. The potent mechanism is a rise in the teacher's consciousness of the reading development and instruction in the class. The teacher is alerted to change. Thereafter, planning for change is a highly individual task for each mother-tongue teacher. The project has changed the general reading progression within the school system, and has reduced the number of children with reading problems.

CS004397

1.1. Criticism of the instruction provided by the schools

Since the late 1960´es, the instruction provided by the primary and secondary school in Denmark, has been exposed to increasing public debate and criticism. This criticism has comprised large parts of the curricula and levels of learning in different grades both as regards the effectiveness of the elementary reading programs and the teaching of arithmetic as well as the total result achieved after 9 years of school attendance.

This criticism has been fierce and has been directed not only agains the Danish Education Act but also against the teachers. Demands have been set forth for a higher priority of the work on elementary skills such as the 3 R´s: reading, writing, ´rithmetic. Also, that the teachers should maintain better discipline with a view to establishing a calmer and more peaceful working atmosphere. Assessment of pupil achivements and school leaving exams have been considered very important by part of the population. (4)

This reaction on the development of the public school system during the 1960´es, when increasing importance was attached to giving the pupils co-influence and allowing them an independent choice of activities, must undoubtedly be viewed on the background of the contemporary recession in Western Europe. Unemployment and the risk of unemployment have intensified the attention paid to a school education. The parents feel that there is neither time nor money to be spent on subjects and activities that do not point directly at an improvement of the children´s qualifications subsequently to meet the competition for room in the educational system. The extensive unemployment among young people serves to aggravate such attitudes.

The criticism of the public school system is a general phenomenon; in Western Europe, U.S.A., and Australia at any rate. There is, therefore, a very likely risk that measures would be introduced such as external control, systems of steering and sanctions, etc. The English monitoring programs and the American accountability programs are examples in this respect (1, 15).

1.2. Control of children´s reading development

The political and administrative authorities within the public school system have a legitimate right to be kept informed of the results achieved from the instruction provided by the schools. This naturally applies also to the Elementary Reading Programs, which will be the subject of this review.

The parents will have a natural interest in being kept continuously informed of their child's scholastic development. This has, indeed, been emphasized in the Danish Education Act of 1975.

The teachers, on their part, also need constantly to follow the reading development of their pupils so as to be able to arrange for any needed individual support of the pupils and plan the teaching of the class on the basis of a close, constant awareness of its current stage of development.

All parties interested in the school - including the pupils - therefore, have a mutual interest in being able to follow the quality of the teaching with a view to procuring sufficient resources and ensure improvement of the teaching both as regards form and content.

2.1. Reading Research in Lyngby-schools

Concurrently with the mentioned trends in developments within the school and the community, the Lyngby-Taarbæk school system, comprising 12 schools with a total of about 5,600 pupils, has since 1970 been following the reading development of the pupils in grades 2 - 4 or 5 with silent reading tests. Originally this comprehensive group testing had the following two objectives:

1. to control the group tests used with a view to a possible revision of the tests, and
2. to compare the reading development of the pupils during the 1970'es against that effected during the 1960és.

On the basis of the reading tests, which showed a lower reading proficiency during the first few years of school attendance, the test results have been put to practical use in cooperation between teachers of the mother tongue, reading specialists and psychologists. This cooperative project is centered on a dialogue between teachers of the mother tongue and the reading specialists on the reading development of the class ascertained on the basis of the group test results.

Thus, it is not only a question of a continuous control or monitoring on the basis of the group tests but also of an internal evaluation that forms the basis for evaluation of the planning of the teaching in a dialogue between two teachers (13).

2.2. The Reading Tests

Two different group reading tests are applied for the first 4 or 5 years of school attendance.

One is a word-silent reading test comprising 400 words and entitled OS400. The other one is a sentence-silent reading test comprising 50

items and entitled S5o.

2.2.1. OS4oo

OS4oo stands for word-silent reading test with 4oo words. As shown at the top of Fig. 1, each word is illustrated by 4 drawings, the content of one of which covers the meaning of the word. The pupil reads the words while crossing out the respective drawings. The rate of reading is recorded at 5, 1o and 15 minutes. The test is intended for children in grades 1 - 3. Points may be scored for numbers of read or passed items and for number of correctly solved items (5, 1o, 12).

2.2.2. S5o

S5o stands for sentence-silent reading test with 5o sentences. Each sentence is illustrated by 7 drawings as shown at the bottom of Fig. 1. One only of the drawings covers the meaning of the sentence fully, while another two cover essential aspects of the meaning whereas the remaining drawings are unacceptable as solutions of the items. A record is made of the points scored by each pupil at 2½, 5, 7½, and 15 minutes. The test is used for children in grades 3 - 5 (11,14). In grade 5 there is a ceiling effect.

OS4oo was standardized in 1966/67 and S5o in 197o/71. The results achieved by the pupils may be transformed to a standard 11-point scale called the c-scale, cf. Fig. 2.

2.3. The Reading Development has changed

Since the early 197o´es a considerable change in the reading development of the pupils as compared with the 196o´es has been noted in the Lyngby-Taarbæk schools.

In grade 2 the average class reading levels are much lower. There is a heavy concentration of pupils at a very elementary level.

In grade 3 the average class reading levels are but slightly lower than was previously the case. There has, however, been a considerable increase in variability resulting in a strong concentration of very weak and very strong readers, respectively. Cf. Fig. 3.

In grades 4 and 5 the difference between average class reading levels now as compared with previously does not seem pronounced. A small concentration of extremely poor readers may, however, be noticed.

It may be concluded that the initial reading stage is longer than before, and that there tend to be more very good readers but also a

larger number of very poor readers. This, however, seems to have been adjusted by the time when the pupils reach grade 5.

The experience gained by a number of Danish school systems is in good correspondence with the foregoing findings (5).

2.4. What changes have taken place in the teaching of the mother tongue?

A reply to this question will, of course, require direct classroom observations and analyses of the teaching materials. Discussions with remedial teachers may, however, give an impression of the changes effected from the 1960´es until the 1970´es as regards the teaching of Danish (8,9).

During the 1960´es and the early 1970´es increasing importance was attached to independent work on the part of the pupils in the activities connected with the subject of Danish, including also the reading. The teaching was aimed at providing the pupils with independence and free choice within the framework of education. This type of teaching has ironically been referred to as "the supermarket philosophy in education" (4,13).

For the first few grades, the time allowed on the curriculum for the subject of Danish has, moreover, been cut by 25-30% from 1960 till 1978.

2.5. Planning for changes in the reading Instruction

It was concluded in Lyngby-Taarbæk that it would be desirable to speed up the reading development to some extent. Therefore, the teachers were told to speed up the rather slow initial start. Moreover, it was pointed out to them that a concentration was building up of very poor readers, who were unable to benefit from the forms of work that were based on sufficient maturity on the part of the pupils to choose their own assignments and mode of working.

These two points have been emphasized in conversations about individual classes and in more general reviews of these conditions adressed to teacher and parent groups and through the mass media made known to the general public. It was underlined that it would be valuable to continue providing the good readers with a possibility of being assigned relevant tasks.

As a result of the emphasis placed on this point, the average class reading levels for grades 2 and 3 in the Lyngby-Taarbæk schools have been increased (cf. Fig. 2). Moreover, the group of very poor readers has been reduced considerably over the last three years (cf. Table 2). This 3-year period also comprises the most intensive and systematic testing, scoring and feedback, both to the classes and, in general,

also to the teachers, parents and administrators of the school system as well as to the local school politicians.

Parenthetic it can be mentioned, that the new curriculum from 1976 now recommends to speed up the reading development in grades 1 and 2. The last curriculum from 1960 recommended a slow initial start in reading to secure the reading development of immature children.

2.6. Where is the mechanism of change?

It seems obvious that an unproductive monitoring activity will not initiate any change but will only have the effect of dangerous control without anybody being able to clarify what change is desired or in what manner the change, if any, should be effected. The situation in which preparations and plans for any change may be made is undoubtedly the conversation between the reading specialists and the teachers of the mother tongue in respect of the feedback. The teacher becomes increasingly aware of the functioning of the class as regards reading and in the differentiated dialogue and conversation with a colleague she becomes inspired to further consider the planning of the teaching and the change desired. Moreover, the teacher becomes increasingly aware of those pupils in her class who differ from the rest to any marked extent, whether in a negative or positive sense.

Conversations with teachers of Danish show that the change probably constitutes the increased awareness of the reading development and reading problems of the class as well as of the individual pupils. This greater awareness brings out the different shades in the observation of the pupils and the way they are handled in the class. It has e.g. been observed that grade 1 teachers often continue a very elementary alphabetical training and word training for a longer period than required by the class as a whole. This means that also the slowest one third of the class will receive a sufficiently systematic instruction in the elementary reading skills. Previously, the teacher would often pass on in the reading program when a majority of the pupils in the class mastered certain stages.

2.7. Reading test feedback

There is an outstanding need among the teachers of being able to talk with their colleagues of the development of their class. Not many colleagues are interested or have the time to spare.

Within the Lyngby-Taarbæk school system every mother tongue teacher in the lower grades are given the opportunity of a conversation with a reading specialist on the annual group reading tests given in November. This conversation is being prepared by the reading specialist who per-

forms the testing, does the scoring and prepares the conversation. The conversation is based on class results in reading but also involves the teachers evaluation of the daily work in the classroom and her planning of the teaching so that the conversation involves a combined evaluation of the test results and of the instruction provided by the teacher.

This dialogue between two teachers thus represents direct interaction between reading test results and the teaching of the mother tongue.

The conversation is focussed on the achievements of the class as a whole, while the results achieved by the individual pupils is related to the overall results. The primary objective is to give the teacher a better basis for a change in her reading program by improving her knowledge of the skills learned by her class.

The educational and psychological group testing feedback has in the period from 1977 and the next three years been extended so as also to comprise skills such as spelling, arithmetic and problem solving as well as social status in the class and self-concept. For each of these group tests a systematic feedback manual has been developed (2).

3.1. Teaching and testing

A reading test shows but a narrow segment of the overall results of the teaching of the mother tongue. Development of reading skills is but one of many activities in the mentioned subject, and apart from considering this limitation, it is a question of a special reading situation: The test situation.

The results from a reading test never lend themselves to any wide interpretation. Description and interpretation of reading development on the basis of tests requires semi-annual or annual testing. Such repeated testings are necessary for a description of the development of a class or a pupil.

The application of a reading test, moreover, is only a reasonable affair, if the skills to be tested have been worked upon in the teaching of reading in the period just before testing. The choice of a group test, therefore, requires careful determination of the exact information desired by the teacher and clarification of the goals for the instruction at the time when the reading test is to be applied.

The application of reading tests intended to have an educational function thus requires a careful, systematic decision. A test applied without such advance considerations will necessarily have a distorting effect on the continued planning of the teaching. In such cases

the test results will lead to competition between pupils, classes and teachers, and they may very easily have a tendency to intensify segregation by giving wishes for segregation of pupils a stamp of authoritative nature (3).

3.2. Evaluation comprises comparisons

Irrespective of the evaluation procedures adopted by the psychologist or teacher when they want to describe a class or a pupil, they will use a comparison as a measure, a socalled point of reference. In this respect, there are three alternatives:

1. A comparison of the reading results with the results achieved by other pupils. The standard scales grow out of this procedure. This type of comparison is called norm-referenced evaluation.

2. A comparison of the reading results against the educational goal. This is called criterion-referenced evaluation.

3. A comparison of the reading results with results obtained by the same class or pupil at an earlier time. This may be called developmental referenced evaluation. The teaching is aimed at pupil growth, a growth in skills, knowledge and attitudes. In this connection the developmental aspect is of central importance. When using tests in educational practise, it is of decisive importance to include the developmental aspect in the evaluation strategies.

One single test result obtained at a certain time will, no matter how comprehensive and differentiated it may be, provide apoor basis for a prognosis of the class or the pupil's reading development and insufficient support of the further planning for class or pupil. A developmental referenced evaluation must, to be usable, be based on at least 2 and preferably 3 or more testings eventually with the same test. This is a prerequisite for description of a development and for a long-range view of the teaching of class or pupil.

3.3. The class is the natural educational unit

Educationally, the reading test results may be used in three widely different ways or levels within the school system.

The central level is the use of the results from the whole class. This use is implemented through the systematic dialogue between reading specialist and mother tongue teacher, about the class as representing a natural educational unit.

In addition to this use, reading test results may be used for de-

scription of the individual pupil or a pupil population, i.e. the total number of pupils in certain grades or an entire school system or even larger districts.

When the test results are used for description of the total number of pupils of a school system, they may give rise to a general debate on teaching conditions, educational resources (teaching materials and number of lessons in the subject Danish) as well as on the effectiveness and quality of the teaching as related to the curriculum.

Results from reading tests based on an individual class may be used to support and direct decisions for change in the reading program for the class as a part of the total educational program in the mother tongue instruction. Furthermore it can point out groups of pupils displaying an outstandingly slow or rapid reading development, for which specific attention or support is needed.

When the test results for the individual pupil are analyzed it is for a diagnostic description of the pupil´s reading behavior and style. This often forms the basis for individual help in the classroom or in an educational clinic, which is placed on each school.

It is important to point out that the test results used at class level or for individual analysis are used for internal evaluation only and not as a means of controlling class or teacher. In case of control activities in respect of an individual class or teacher by such a misuse of reading test results, this will generally have the effect of locking the teaching into working forms of a competitive nature. Hereby, group testing have a negative backwash effect on teaching as such. The processes of change will be stopped, the teachers will be insecure, and the pupils will not meet creative, open, and activating education.

The external evaluation, where the parents as legitimate parties have the right to obtain information on their child´s development cannot be founded on group test results. The external evaluation for the benefit of the parents must be based on a comprehensive, differentiated description of the wide spectrum of the learning of the mother tongue, so that the development of skills, the acquisition of knowledge and the formation of attitudes all are covered in the description (including assessments) which the teacher and the parents should build up together with a view to supporting the growth of the individual child.

Group reading tests constitute a valuable tool for support of educational activities but cannot be used for external evaluation as all they can give is a snapshot of part of the learning.

4.1. Conclusion

Group reading tests may function as a support for educational planning and information about reading development in the class provided that the conditions outlined below are complied with:

1. that the results of the reading tests are analyzed, especially with a view to the reading skills achieved by the class. The class is the natural educational unit. The teacher of the mother tongue, who in most cases acts also as home room teacher for a period of from 7 to 9 years, and the pupils in the class shares for a very long period common conditions for social, emotional and cognitive growth. The reading test results characterize not only the class but also the teacher (cf. Table 1, A and B).

2. that the reading tests are used for internal evaluation only, i.e. to support the teacher's knowledge of his pupils and his planning of the teaching. The external evaluation cannot be based on test results but must be founded on broad descriptions of skills, knowledge and attitudes.

3. that the reading tests are used in a developmental referenced evaluation in which the achievements of the class and the pupils are compared with their achievements at a number of different moments during their school career, e.g. once or twice a year. Standard scales, as f. inst. C-scores are not needed; raw scores are satisfactory and actually hold more information.

4. that reading test feedback be provided in a dialogue prepared in advance between the teacher of the mother tongue and a reading specialist or some other teacher, expert in reading tests. The intention of this systematic feedback is to discuss the relationship between the instruction provided by the teacher and the picture obtained on the basis of the reading tests, of the reading skill achieved by the class as a whole.

4.2. Epilogue

The project is handled by the local school psychological office in cooperation with the coordinating reading specialists on each school. Datalogical and statistical analyses are prepared in cooperation with Jan Rattleff, cand. psych. and Edit Kjer Petersen both from the Royal Danish School of Educational Studies and Svend Kreiner Møller, cand. stat. of the Danish Institute for Educational Research. Figures and tables are prepared, drawed and printed by the above mentioned persons in cooperation with Mogens Hansen.

5. Definition of Words

monitoring

periodical collection of data on knowledge of or skills within a subject, frequently from among very large groups of pupils. Monitoring only covers the collection of data as such, whereafter the data may be used e.g. for standardization or evaluation of the achievement level for the whole country (6).

accountability program

educational program, in which the teachers involved commit themselves to bring the pupils up to a specifically defined achievement level within a stated period. This program may e.g. be carried out by having the school administration control the effectiveness of the instruction provided by the teacher, while at the same time small groups of teachers are committed, on mutual basis, to critisize the instruction with a view to improvement, or a private firm may take over the instruction, whether entirely or to some extent, against payment if as a result of the instruction, achievements exceed a certain level agreed upon in advance. Teachers who are unable to meet their commitments under the program risk not having their contract renewed. (6)

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Table 1A. Reading development in grades 2 - 4 for 24 classes with a total of 525 pupils in Lyngby-Taarbæk schools 1975-77.

The word-silent reading test OS4oo consists of 4oo items marked "right" or "wrong". OS4oo standards from 1967:

Grade 2, November: c-score 5 (2o%) = 95 - 114 correct items
Grade 3, November: c-score 5 (2o%) = 159 - 179 correct items.

The sentence-silent reading test S5o consists of 5o items, each scored with 1, 2 or 3 points adding to max. 15o points. S5o standards from 1971:

Grade 3, November: c-score 5 (2o%) = 71 - 83 points
Grade 4, November: c-score 5 (2o%) = 83 - 92 points.

The extremes are class number 1o and class number 13. See Table 1B.

In some classes with slow development the reading progress accelerates in grade 4. In the other extreme, a few fast developing classes seem to show the opposite tendency.

High-average classes generally have a stable "fast development". Low-average classes have a "slow development". The teaching-learning conditions do not seem to initiate marked changes in rankings when comparing classes.

Test month November of each year		OS Åro 1o minutes correct items				S 5o 7½ minutes sum of points			
		grade 2 1975		grade 3 1976		grade 3 1976		grade 4 1977	
Class	Number of pupils	M	SD	M	SD	M	SD	M	SD
1	24	1o3	45	164	58	8o	22	11o	16
2	22	93	37	188	53	84	23	1o6	17
3	24	75	34	184	56	9o	26	1o7	19
4	17	91	47	166	39	83	22	1o8	18
5	17	88	36	175	5o	81	18	1o2	22
6	25	12o	58	211	6o	95	26	115	23
7	23	95	47	167	52	84	22	98	2›
8	21	12›	49	223	51	1o4	19	11o	14
9	21	112	42	198	49	93	17	1o5	16
1o	2o	135	49	212	43	1o2	14	114	11
11	22	85	36	164	3o	89	18	1o2	16
12	19	1o1	44	176	57	91	25	1o8	24
13	24	5o	45	121	53	63	3o	94	24
14	21	71	26	138	45	67	22	96	24
15	24	83	37	164	57	79	34	96	27
16	25	76	34	172	66	79	33	99	22
17	22	99	32	153	28	83	21	1o2	16
18	24	79	47	137	64	71	31	89	24
19	2o	1o4	5o	179	58	87	3o	1o3	21
2o	15	1o2	64	186	57	84	27	-	-
21	25	127	43	22o	56	99	2o	116	16
22	25	122	37	2o3	51	97	17	12o	17
23	22	1o3	51	164	47	8o	19	98	15
24	23	84	48	131	43	64	24	85	12

Table 1A.

Table 1B. Reading development in specific classes in grades 2 - 4, 1975-77. Class numbers 1o and 13 are presented out of 24 classes. See table 1A.

For each class are shown 4 frequency tables and diagrams:
Grade 2, November 1975, OS4oo
Grade 3, November 1976, OS4oo
Grade 3, November 1976, S5o
Grade 4, November 1977, S5o.

Only pupils tested the year before are shown in years 1976 and 1977.
OS4oo-results are presented in groups of 2o correct items (max. 4oo).
S5o-results are presented in groups of 1o points (max. 15o).

Word Definitions:

Antal =	frequency, number of pupils
Pml =	per Thousand
Kum. antal =	cumulated frequency
Kpml =	per thousand, cumulated
Værdi =	score value groups
ANTAL/POINT =	number of pupils in each group, 5 crosses give one pupil
Kvartil =	quartile
N =	number, number of pupils
Gns =	average score
Spredning =	standard deviation, SD
Pointsum =	sumscore in total
Svargrundlag =	number of pupils tested/retested

Class number 10

Frequency table and diagram

OS 400, 10 minutes, number of correct items

Grade 2, november 1975

Antal	Pml	Kum.antal	Kpml	Värdi	ANTAL
0	0			/	
0	0	0	0	0	
0	0	0	0	20	
1	50	1	50	40	+++++
1	50	2	100	60	+++++
0	0	2	100	80	
0	0	2	100	100	
7	350	9	450	120	++++++++++++++++++++++++++++++++++++
4	200	13	650	140	++++++++++++++++++++
0	0	13	650	160	
3	150	16	800	180	+++++++++++++++
1	50	17	850	200	+++++
3	150	20	1000	220	+++++++++++++++
0	0	20	1000	240	
0	0	20	1000	260	
0	0	20	1000	280	
0	0	20	1000	300	
0	0	20	1000	320	
0	0	20	1000	340	
0	0	20	1000	360	
0	0	20	1000	380	
0	0	20	1000	400	
0	0			*	

Kvartil nr 1 = 117
Kvartil nr 2 = 131
Kvartil nr 3 = 168
N=20 Gns=135.30 Spredning=48.573 Pointsum=2706.0

Grade 3, november 1976

Antal	Pml	Kum.antal	Kpml	Värdi	ANTAL
1	50			/	
0	0	0	0	0	
0	0	0	0	20	
0	0	0	0	40	
0	0	0	0	60	
0	0	0	0	80	
0	0	0	0	100	
0	0	0	0	120	
1	50	1	52	140	+++++
1	50	2	105	160	+++++
2	100	4	210	180	++++++++++
4	200	8	421	200	++++++++++++++++++++
3	150	11	578	220	+++++++++++++++
3	150	14	736	240	+++++++++++++++
3	150	17	894	260	+++++++++++++++
1	50	18	947	280	+++++
1	50	19	1000	300	+++++
0	0	19	1000	320	
0	0	19	1000	340	
0	0	19	1000	360	
0	0	19	1000	380	
0	0	19	1000	400	
0	0			*	

Kvartil nr 1 = 173
Kvartil nr 2 = 213
Kvartil nr 3 = 254
N=19 Gns=212.15 Spredning=43.474 Pointsum=4031.0 Svargrundlag%=95.000

Class number 1o

Frequency table and diagram

S 5o, 7½ minutes, number of points

Grade 3, november 1976

Antal	Pml	Kum.antal	Kpml	Værdi	POINT
1	50			/	
0	0	0	0	0	
0	0	0	0	10	
0	0	0	0	20	
0	0	0	0	30	
0	0	0	0	40	
0	0	0	0	50	
0	0	0	0	60	
1	50	1	52	70	+++++
1	50	2	105	80	+++++
2	100	4	210	90	++++++++++
2	100	6	315	100	++++++++++
8	400	14	736	110	++
4	200	18	947	120	++++++++++++++++++++
1	50	19	1000	130	+++++
0	0	19	1000	140	
0	0	19	1000	150	
0	0			*	

Kvartil nr 1 = 94
Kvartil nr 2 = 102
Kvartil nr 3 = 115
N=19 Gns=101.89 Spredning=14.149 Pointsum=1936.0 Svargrundlag%=95.000

Grade 4, november 1977

Antal	Pml	Kum.antal	Kpml	Værdi	POINT
2	100			/	
0	0	0	0	0	
0	0	0	0	10	
0	0	0	0	20	
0	0	0	0	30	
0	0	0	0	40	
0	0	0	0	50	
0	0	0	0	60	
0	0	0	0	70	
0	0	0	0	80	
0	0	0	0	90	
2	100	2	111	100	++++++++++
4	200	6	333	110	++++++++++++++++++++
9	450	15	833	120	++
2	100	17	944	130	++++++++++
1	50	18	1000	140	+++++
0	0	18	1000	150	
0	0			*	

Kvartil kan ikke beregnes, for få grupper!
N=18 Gns=113.72 Spredning=11.150 Pointsum=2047.0 Svargrundlag%=90.000

Class number 13

Frequency table and diagram

OS 400, 10 minutes, number of correct items

Grade 2, november 1975

Antal	Pml	Kum.antal	Kpml	Värdi	ANTAL
0	0			/	
0	0	0	0	0	
8	333	8	333	20	++++++++++++++++++++++++++++++++
5	208	13	541	40	++++++++++++++++++++
4	166	17	708	60	++++++++++++++++
3	125	20	833	80	++++++++++++
1	41	21	875	100	++++
1	41	22	916	120	++++
1	41	23	958	140	++++
0	0	23	958	160	
0	0	23	958	180	
1	41	24	1000	200	++++
0	0	24	1000	220	
0	0	24	1000	240	
0	0	24	1000	260	
0	0	24	1000	280	
0	0	24	1000	300	
0	0	24	1000	320	
0	0	24	1000	340	
0	0	24	1000	360	
0	0	24	1000	380	
0	0	24	1000	400	
0	0			*	

Kvartil nr 1 = 19
Kvartil nr 2 = 3
Kvartil nr 3 = 62
N=24 Gns=50.041 Spredning=44.904 Pointsum=1201.0

Grade 3, november 1976

Antal	Pml	Kum.antal	Kpml	Värdi	ANTAL
4	166			/	
0	0	0	0	0	
0	0	0	0	20	
0	0	0	0	40	
0	0	0	0	60	
5	208	5	250	80	++++++++++++++++++++
5	208	10	500	100	++++++++++++++++++++
3	125	13	650	120	++++++++++++
2	83	15	750	140	++++++++
0	0	15	750	160	
0	0	15	750	180	
4	166	19	950	200	++++++++++++++++
0	0	19	950	220	
0	0	19	950	240	
0	0	19	953	260	
1	41	20	1000	280	++++
0	0	20	1000	300	
0	0	20	1000	320	
0	0	20	1000	340	
0	0	20	1000	360	
0	0	20	1000	380	
0	0	20	1000	400	
0	0			*	

Kvartil nr 1 = 8
Kvartil nr 2 = 9
Kvartil nr 3 = 133
N=20 Gns=121.40 Spredning=52.532 Pointsum=2428.9 Svargrundlag%=83.333

Class number 13

Frequency table and diagram

S 5o, 7½ minutes, number of points

Grade 3, november 1976

Antal	Pml	Kum.antal	Kpml	Värdi	POINT
4	166			/	
0	0	0	0	0	
0	0	0	0	10	
0	0	0	0	20	
1	41	1	50	30	++++
5	208	6	300	40	++++++++++++++++++++
4	166	10	500	50	++++++++++++++++
2	83	12	600	60	++++++++
2	83	14	700	70	++++++++
1	41	15	750	80	++++
0	0	15	750	90	
1	41	16	800	100	++++
2	83	18	900	110	++++++++
1	41	19	950	120	++++
0	0	19	950	130	
1	41	20	1000	140	++++
0	0	20	1000	150	
0	0			*	

Kvartil nr 1 = 40
Kvartil nr 2 = 50
Kvartil nr 3 = 71
N=20 Gns=63.400 Spredning=30.366 Pointsum=1268.0 Svargrundlag%=83.333

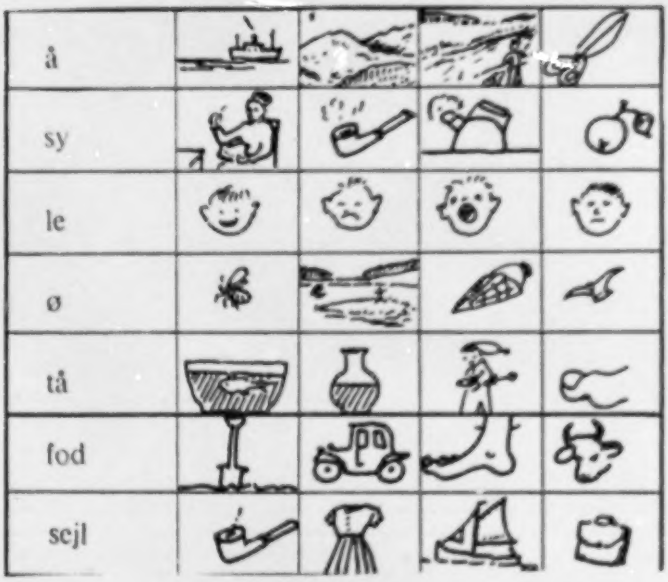
Grade 4, november 1977

Antal	Pml	Kum.antal	Kpml	Värdi	POINT
5	208			/	
0	0	0	0	0	
0	0	0	0	10	
0	0	0	0	20	
0	0	0	0	30	
0	0	0	0	40	
0	0	0	0	50	
0	0	0	0	60	
1	41	1	52	70	++++
7	291	8	421	80	++++++++++++++++++++++++++++
3	125	11	578	90	+++++++++++
3	125	14	736	100	+++++++++++
1	41	15	789	110	++++
1	41	16	842	120	++++
1	41	17	894	130	++++
0	0	17	894	140	
2	83	19	1000	150	++++++++
0	0			*	

Kvartil nr 1 = 77
Kvartil nr 2 = 87
Kvartil nr 3 = 102
N=19 Gns=94.052 Spredning=23.763 Pointsum=1787.0 Svargrundlag%=79.166

School-year (test month November each year)	Grade 2 OS4oo	Grade 3 OS4oo/S5o	Grade 4 S5o	Grades 2-4 TOTAL
1975	<u>1o.3%</u>	1o.o%	4.9%	8.3%
1976	8.7%	<u>7.1%</u>	4.3%	6.5%
1977	4.7%	4.1%	<u>2.7%</u>	3.8%

<u>Table 2</u>. Severely retarded readers in school-years 1975-77 in Lyngby-Taarbæk schools. Percent of pupils with c-scores 0 and 1 (adding to 4% in standard population) in grades 2-4. Figures underlined show percentage of poor readers in the same population in grades 2-4.



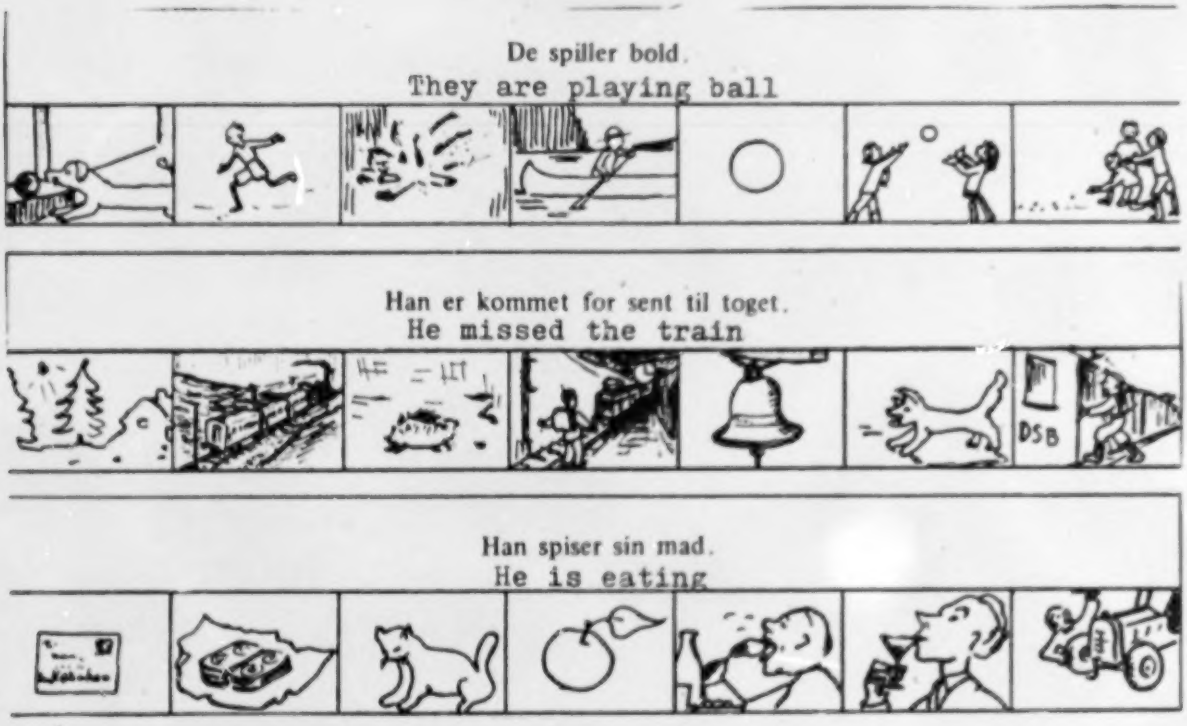


Figure 1. Items from the word-silent reading test OS400, standardized 1966-67 for grades 1-3 and the sentence-silent reading test S50 (with parallel-test), standardized 1970-71 for grades 2-5. Both tests are group test where the reader chooses from a row of picture-drawings.

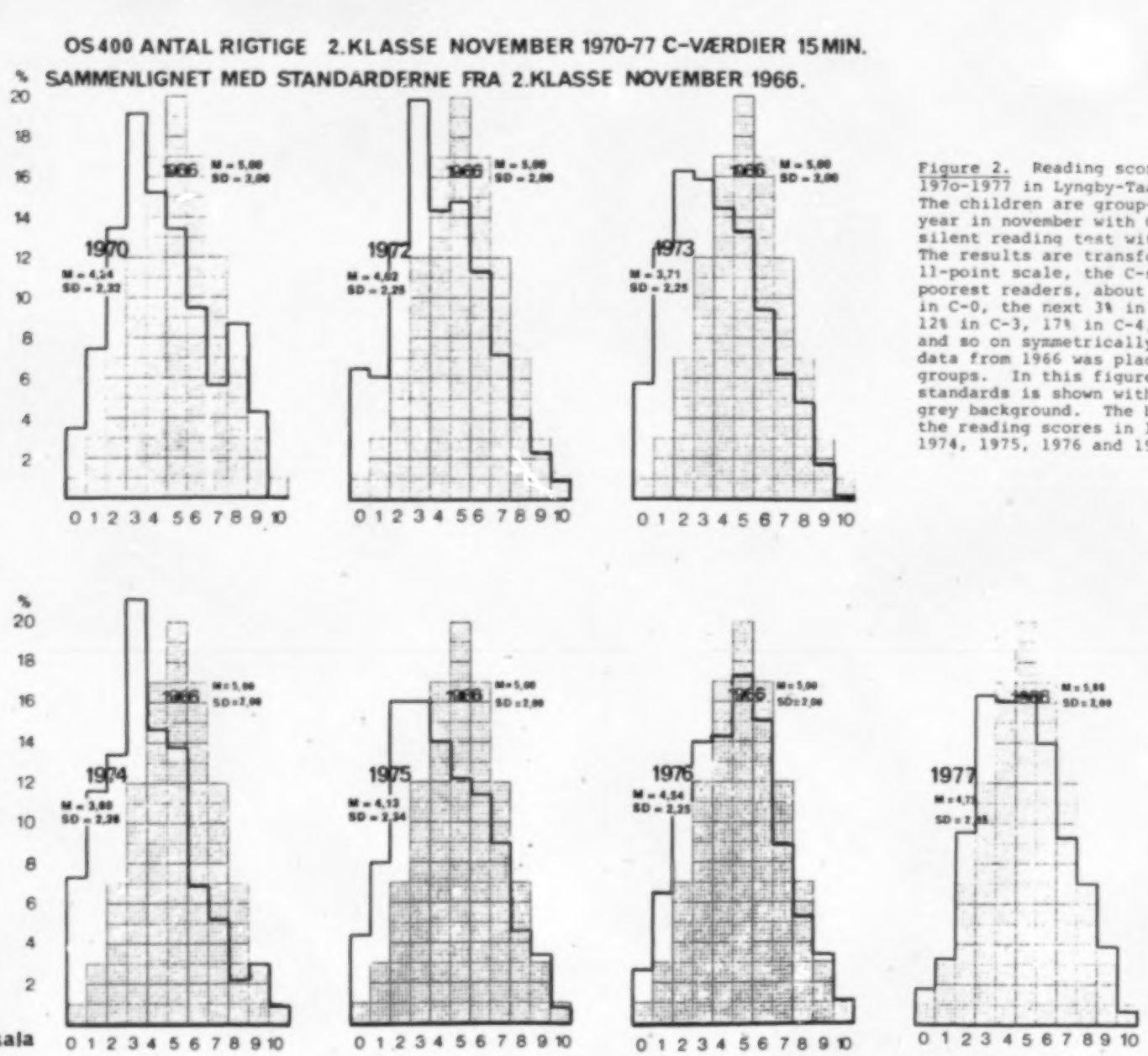


Figure 2. Reading scores in grade 2, 1970-1977 in Lyngby-Taarbæk Schools. The children are group-tested each year in november with OS400, a word-silent reading test with 400 items. The results are transformed to an 11-point scale, the C-scale. The poorest readers, about 1%, is placed in C-0, the next 3% in C-1, 7% in C-2, 12% in C-3, 17% in C-4, 20% in C-5 and so on symmetrically. The standard data from 1966 was placed in these 11 groups. In this figure the 1966-standards is shown with the symmetric grey background. The black lines show the reading scores in 1970, 1972, 1973, 1974, 1975, 1976 and 1977.

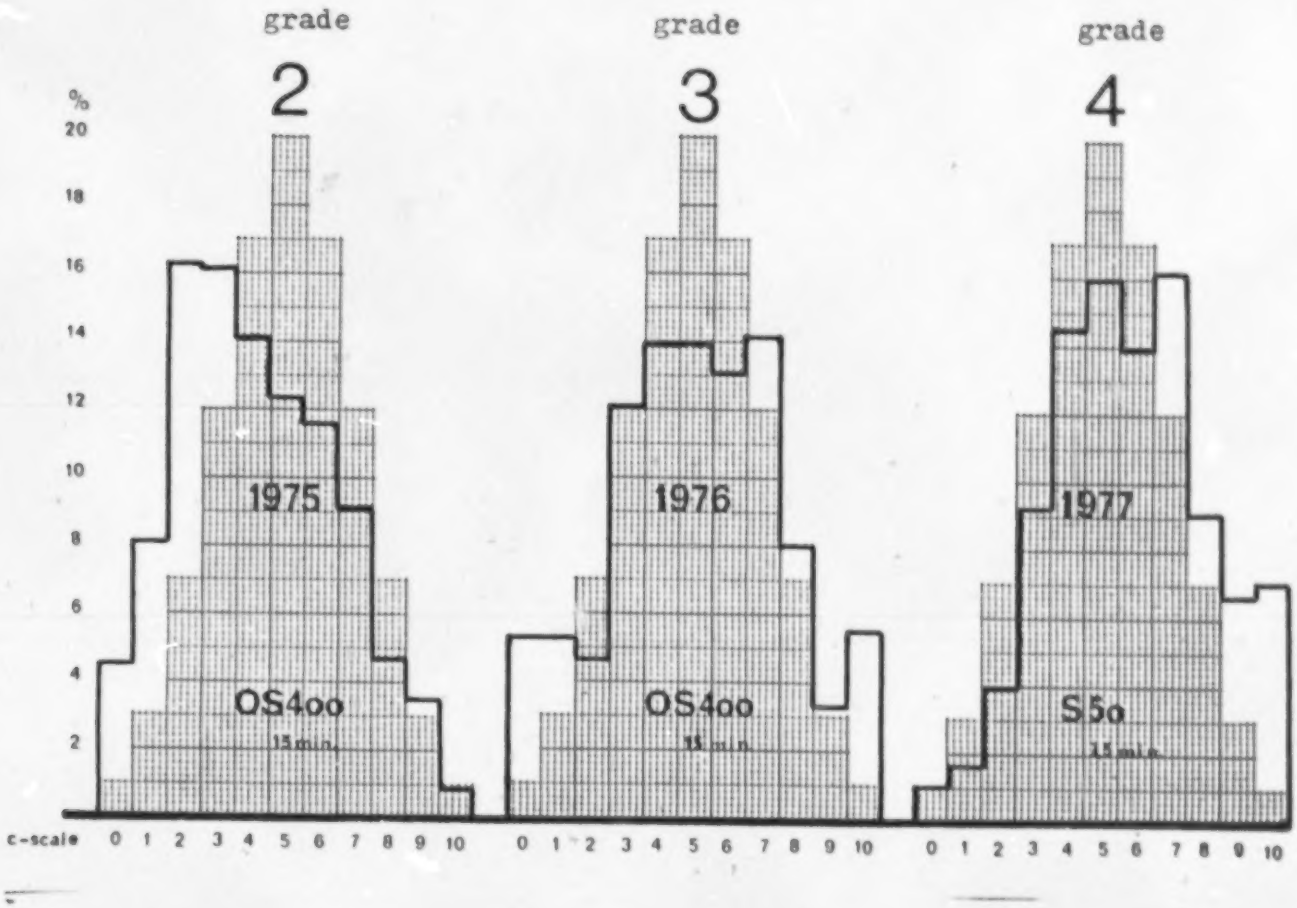


Figure 3. The general trend in reading development in grades 2 - 4, school years 1975-77. The standards are shown in the symmetric, grey background figure. C-score 0 is the poorest readers, c-score 10 is the best readers. The c-scale is an 11-point scale. Each c-group is shown in percent. The actual reading levels are from 1975, 1976 and 1977, shown in black lines.